

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

TELCORDIA TECHNOLOGIES, INC., )  
  )  
Plaintiff/Counterclaim Defendant, )   **REDACTED**  
  )  
  **PUBLIC VERSION**  
v.                                     )  
  )  
CISCO SYSTEMS, INC.,               )   Civil Action No. 04-876-GMS  
  )  
Defendant/Counterclaim Plaintiff. )

**TELCORDIA TECHNOLOGIES, INC.'S SUBMISSION IN SUPPORT OF ITS  
PROPOSAL FOR AN ONGOING ROYALTY AT MARKET RATES**

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Dated: January 31, 2012

**I. Introduction:** A Delaware Jury found that Cisco willfully infringed Telcordia's patents; this Court ruled that Telcordia is entitled to damages, interest, and an ongoing royalty in lieu of an injunction; the Federal Circuit affirmed this Court's findings on these issues; and—in order to narrow the dispute and cut off additional interest on the judgment—Cisco paid damages and interest owed to Telcordia for (1) Cisco's *past* infringement and (2) Cisco's post-judgment infringement under the jury's effective royalty rate. The sole remaining dispute centers on whether the jury's effective royalty rate for *past* infringement is also the appropriate rate for Cisco's *post-judgment* infringement. Telcordia respectfully submits that it is not. Rather, for numerous reasons—including that the case was decided in Telcordia's favor and that Cisco chose to continue infringing despite the verdict—the facts and the law support a post-judgment royalty rate that is higher than the rate used for past infringement.

**II. Procedural History:** The jury's damages award in this case amounted to an effective royalty rate of 0.64% for past infringement.<sup>1</sup> In its post trial motions, Telcordia sought an injunction or, in the alternative, an ongoing royalty at Telcordia's going market royalty rates. D.I.s 367, 368. Cisco opposed the injunction, opposed the issuance of an ongoing royalty, and argued in the alternative that any ongoing royalty should be based not on market rates, but rather on the jury's rate. D.I. 392. This Court found that Telcordia is entitled to an ongoing royalty, directed the parties to negotiate the terms of the royalty, and directed the parties to file competing proposals if unable to agree upon the terms of the royalty on their own. D.I. 420. On appeal, the Federal Circuit expressly affirmed on these issues. *Telcordia Techs., Inc. v. Cisco Sys., Inc.*, 612 F.3d 1365, 1379 (Fed. Cir. 2010). As the parties have been unable to reach agreement on the amount of the royalty, Telcordia respectfully

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<sup>1</sup> The effective royalty rate is calculated by dividing the jury's total damages number by the total infringing sales number shown on Schedule 1 of the May 29, 2007, Declaration of James J. Nawrocki. D.I. 365.

submits its proposal that the ongoing royalty rate in this case should be Telcordia's market rates of

**REDACTED**

, as shown in Telcordia's **REDACTED**

**REDACTED** Exhibit A (D.I. 368).<sup>2</sup>

**III. The Infringing Products Are Important to Cisco's Business:** Cisco's optical networking system ("ONS") products—specifically the ONS 15305, 15310, 15327, 15454, and 15600—have been found to infringe Telcordia's '763 patent.<sup>3</sup> Telcordia's '763 patent covers, *inter alia*, Cisco's implementation of an established industry standard—called "GR-1400"—that enables fiber optic ring networks to automatically and seamlessly recover when there is a failed link in the ring. D.I. 354 at 1052. The evidence presented at trial demonstrated that Cisco's implementation of the GR-1400 standard is a particular feature that Cisco's customers expect, require, and demand. D.I. 354 at 1027.

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<sup>2</sup> The difference in the parties' positions amounts to roughly **REDACTED**. Exhibts B and C show total royalty and interest analyses under each party's respective position. Specifically, Exhibit B shows the calculation of a total of **REDACTED** consisting of damages and interest using the jury's 0.64% rate for post-judgment sales (this is the amount that Cisco has already paid in order to cut off additional interest on this principal). In contrast, Exhibit C shows the calculation of a total of **REDACTED** consisting of damages and interest using Telcordia's market rates **REDACTED** **REDACTED** for post-judgment sales.

Because the Court issued Judgment on May 16, 2007 (D.I. 348), Exhibits B and C are broken down into pre-May 16, 2007 calculations and post-May 16, 2007 calculations. There is a further "post-October 2010" calculation merely because the calculations were based on actual data that Cisco had produced as of October 2010, leaving a small amount of post-October 2010 damages and interest for the '633 patent **REDACTED** to be based on projections rather than actuals.

<sup>3</sup> In this submission, Telcordia focuses its analysis on the royalty rate for the Cisco ONS products found to infringe the '763 patent (versus the different set of products found to infringe the '633 patent) for two primary reasons. First, unlike the '633 patent, there was no dispute at trial as to the technical scope of the products (e.g., chip vs. "board" vs. product) included in the royalty base for the '763 patent. D.I. 355 at 1269-1275; D.I. 392 at 31, n. 21. In other words, for the '763 patent, both Cisco and Telcordia used a nearly identical royalty base for U.S. sales from 2001-2007. Second, the ongoing royalty for the '633 patent is far less consequential than the ongoing royalty for the '763 patent (i.e., the difference between Telcordia's position and Cisco's position likely amounts to about **REDACTED** ongoing royalties for the '633 patent).

Cisco acquired its ONS product lines in 1999 for \$6.9 billion from a company called Cerent. D.I. 355 at 1299-1300. The evidence at trial—along with updated Cisco sales figures—establishes that after factoring out anomalies in the first few years following the acquisition (1999-2002), the sales of the infringing Cisco ONS products began to increase steadily:

YEAR	CISCO'S ONS Revenue
2003	
2004	<b>REDACTED</b>
2005	
2006	
2007	
2008 (through February 4, 2008) <sup>4</sup>	<b>REDACTED</b>

D.I. 392 at Exhibit 8, Schedule 3B (showing relevant Cisco sales through 1/07 as presented to the jury); Exhibits B and C (including relevant Cisco sales after 1/07 as produced by Cisco on November 16, 2010).<sup>5</sup> Over the course of more than a decade, Cisco acquired, fostered, marketed, and successfully developed its ONS product lines so that it could reap the rewards in a now fully-matured market for optical networking systems. This could not have been achieved if Cisco were abruptly prevented from providing its products during the critical period between the May 2007 Judgment and the expiration of the '763 patent. Accordingly, this ongoing royalty period represents a key strategic period for Cisco's ONS products both from a revenue perspective and from a product-positioning perspective. During this time period, Cisco did not redesign, discontinue, or even begin to phase out its ONS products in light of the infringement finding (it could not do so given its customers' expectations). To the contrary, during the "ongoing royalty period," Cisco heavily promoted its ONS products, as well as the upward revenue trend for those products, in its

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<sup>4</sup> The '763 patent expired on February 4, 2008.

<sup>5</sup> As noted during the September 14, 2011, hearing, the parties voluntarily exchanged supplemental discovery on sales (Cisco) and licenses (Telcordia) related to the outstanding ongoing royalty issue.

public communications to investors and customers. For example, the leap in ONS product revenue was important enough for Cisco to highlight in its 2007 Annual Report: “[t]he increase in other product revenue during fiscal 2007 compared with fiscal 2006 was *primarily due to an increase in sales of optical networking products*, sales of IP-based communications solutions to service providers and the additional contribution from Scientific-Atlanta.” Exhibit D. Similarly, in its Summer/ Fall 2007, “Product Quick Reference Guide”—a publication designed to provide Cisco’s partners, resellers, sales teams, and customers with a “broad, high-level overview of Cisco’s products”—Cisco touted the merits of the ONS products (the same products that had just been adjudicated as infringing several months earlier):

- “The Cisco ONS 15454 Multiservice Transport Platform (MSTP) sets the industry benchmark for metropolitan and regional dense wavelength-division multiplexing solutions . . . The ultimate in network management flexibility is achieved through an industry leading, fully reconfigurable optical add/drop multiplexer . . .” (Exhibit E at 8-3);
- “The Cisco ONS 15310-MA offers tremendous service flexibility . . . is a hardened design, and supports up to 99.999 percent reliability for both access and edge networks.” (*Id.* at 8-7);
- “Optimized for the customer location, this evolutionary platform is based on the same technology as the industry leading Cisco ONS 15454 and the ONS 15327.” (*Id.*);
- “The Cisco ONS 15600 provides unparalleled flexibility in designing next generation metro networks . . . allow[ing] service providers to dramatically simplify their metro networks and realize immediate cost, space and operational benefits.” (*Id.* at 8-3).

In sum, Cisco not only enjoyed an upward revenue trend for the infringing ONS products during the ongoing royalty period but also continued to actively promote the products to its partners, sales teams, and customers as “unparalleled,” “industry benchmark[s],” “tremendous[ly] . . . flexibil[e],” and “industry leading.” Cisco’s aggressive positioning of the infringing ONS products in the market during 2007 and 2008 demonstrates that these products were (and are) vitally important to Cisco from a business and strategy standpoint. Indeed, an evaluation of Cisco’s sales database demonstrates large volumes of Cisco ONS product sales to industry giants—such as **REDACTED**

**REDACTED**

—who relied on Cisco to provide “industry leading” optical networking products. Cisco chose to continue its willful infringement because these were not products, or customers, that Cisco could do without during the critical ongoing royalty period.

**IV. Argument:** The Federal Circuit has explained the rationale for differentiating between the amount of a jury’s *pre-verdict* reasonable royalty and the appropriate amount of a *post-judgment* ongoing royalty:

There is a fundamental difference, however, between a reasonable royalty for pre-verdict infringement and damages for post-verdict infringement. Prior to judgment, liability for infringement, as well as the validity of the patent, is uncertain, and damages are determined in the context of that uncertainty. Once a judgment of validity and infringement has been entered, however, the calculus is markedly different because different economic factors are involved.

*Amado v. Microsoft Corp.*, 517 F.3d 1353, 1362 (Fed. Cir. 2008) (citations omitted). In accordance with the Federal Circuit’s sharp distinction between a jury’s reasonable royalty and a post-judgment ongoing royalty, district courts frequently apply ongoing royalty rates that are higher than the reasonable royalty rates found by the jury.<sup>6</sup> Judge Robinson of this Court in particular noted that:

As to . . . the ultimate basis for the award of an ongoing royalty, I concur in Judge Illston’s analysis in the California litigation, that “trial courts should not rely on jury verdicts on reasonable royalties for past infringement because of the ‘fundamental difference’ between pre- and post- verdict damages. *Amado*, 517 F.3d at 1361. Accordingly, the court . . . must assume that the jury finding of liability in this case would have strengthened Cordis’ bargaining position had the parties negotiated a license after the jury verdict.”

*Cordis Corp. v. Boston Scientific Corp.*, No. 03-027-SLR, 2009 WL 3160270 at \*3 (D. Del. Sept. 30, 2009) citing *Boston Scientific Corp. v. Johnson & Johnson*, 2009 WL 97542 at \*5 (N.D. Cal.

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<sup>6</sup>*Creative Internet Advertising Corp. v. Yahoo! Inc.*, 674 F.Supp.2d 847 (E.D. Tex. 2009); *Boston Scientific Corp. v. Johnson & Johnson*, No. C 02-00790, 2009 WL 975424 (N.D. Cal. Apr. 9, 2009); *Paice LLC v. Toyota Motor Corp.*, 609 F.Supp.2d 620 (E.D. Tex. 2009); *Joyal Prods. Inc. v. Johnson Electric North America, Inc.*, No. 04-5172, 2009 WL 512156 (D.N.J. Feb. 27, 2009); *Cummins-Allison Corp. v. SBM Co.*, 669 F.Supp.2d 774 (E.D. Tex. 2009).

April 9, 2009). And the case law addressing post-judgment royalties dictates that while “the licensing terms must be fair to both parties, the fact that [the defendant] is an adjudged infringer who chooses to continue infringing simply cannot be ignored.” *Paice LLC v. Toyota Motor Corp.*, 609 F.Supp.2d 620, 630 (E.D. Tex. 2009). Here, the post-judgment economic facts and circumstances all warrant an ongoing royalty rate in excess of the jury’s 0.64% royalty rate:

- Telcordia’s bargaining position is strengthened by its victory at trial, yielding certainty as to validity, enforceability, and infringement;
- Market conditions evolved and developed in a way that greatly enhanced the value of a license to the ’763 patent during the ongoing royalty period;
- Cisco spent years acquiring and positioning its optical networking products so that it could take advantage of the market when it matured (as demonstrated by Cisco’s impressive sales volumes in the ongoing royalty period—more than double the volumes that Cisco experienced a mere 3-4 years earlier—the market clearly matured during the period in which Cisco would have needed a post-judgment license);
- Telcordia’s licensing history—**REDACTED** demonstrates an industry-wide recognition of Telcordia’s patents;<sup>7</sup>

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<sup>7</sup>A summary of Telcordia’s licenses is attached as Exhibit F.

**REDACTED**

**REDACTED** D.I. 335.

**REDACTED**

were produced to Cisco as part of the voluntary discovery related to the ongoing royalty issue.  
**REDACTED**

**REDACTED**

**REDACTED** Exhibit F nonetheless demonstrates the industry’s widespread interest in lawfully licensing and practicing Telcordia’s patents. Moreover, it is undisputed that

**REDACTED**

**REDACTED** Exhibit A (D.I. 368). However, because Telcordia’s lawful, voluntary licensees did not force Telcordia to endure protracted, disruptive, and expensive litigation, Telcordia was willing to negotiate down from its market rates. Cisco, by contrast, is an adjudicated willful infringer that first strung Telcordia along for years of negotiations and then forced Telcordia into an eight-year long litigation, continuing to willfully infringe even after judgment. Accordingly, the interests of justice would not be served by affording Cisco an ongoing royalty under the same favorable licensing terms enjoyed by some of Telcordia’s voluntary licensees. *Panduit Corp. v. Stahlin Bros. Fibre Works, Inc.*, 575 F.2d 1152, 1158-59 (6<sup>th</sup> Cir. 1978) (“Determination of a reasonable royalty, after election [of risking an infringement finding] cannot

(continued on next page)

- Cisco would not have been willing to simply walk away from the hundreds of millions in additional revenues that it expected to enjoy in the ongoing royalty period, forfeiting those sales to its competitors (many of whom, incidentally, lawfully participated in the market with valid licenses from Telcordia);
- Cisco would not have been willing or able to disrupt its relationships with major customers—who relied on Cisco for ONS products as well as many other products—by pulling its products from the market just when demand for those products was rapidly increasing;
- Cisco’s choice to continue willfully infringing despite the specter of an ongoing royalty illustrates that Cisco did not have any redesign, or any other practical strategy, to capitalize on its heavy investment and development of its ONS product line without using Telcordia’s ’763 patent.

“[T]he assessment of damages for infringements taking place after the injunction should take into account the change in the parties’ bargaining positions, and the resulting change in economic circumstances, resulting from the determination of liability.” *Amado*, 517 F.3d at 1362. Given the unique market and economic conditions as they stood just after the Court’s May 16, 2007, Judgment, and given the change in bargaining positions resulting from that Judgment, Telcordia’s market rates are the appropriate rates for the ongoing royalty.

**V. Conclusion:** Where, as here, (1) a judgment provides certainty as to the previously uncertain disputed issues of infringement, validity, and enforceability, (2) the market evolves in a manner that greatly enhances the value of a license to the infringer, and (3) the infringer chooses to continue infringing, willfully, after an adverse judgment, the law supports an ongoing royalty rate that is higher than the rate awarded by the jury. Telcordia respectfully submits that this Court should impose an ongoing royalty at Telcordia’s market rates

**REDACTED**

**REDACTED**

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(continued from previous page)  
without injustice, be treated as though the infringer had elected [to negotiate a license] in the first place.”)

ASHBY & GEDDES

*/s/ Tiffany Geyer Lydon*

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Dated: January 31, 2012

# **EXHIBIT A**

**REDACTED**

# **EXHIBIT B**

**REDACTED**

# **EXHIBIT C**

**REDACTED**

# **EXHIBIT D**

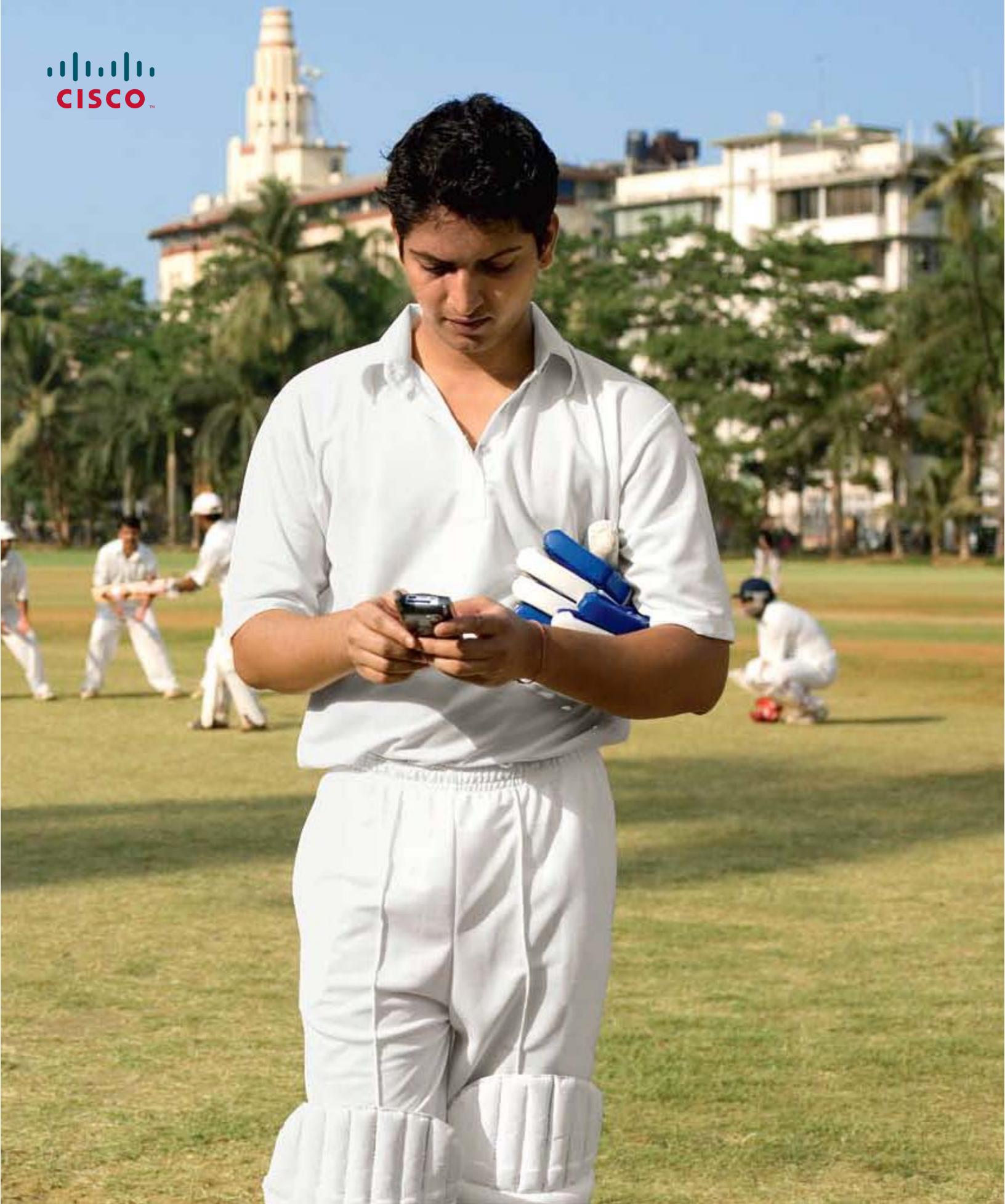


Exhibit D

## Management's Discussion and Analysis of Financial Condition and Results of Operations

**Net Product Sales by Groups of Similar Products**

Routers The increase in net product sales related to routers in fiscal 2007 compared with fiscal 2006 was primarily due to higher sales of our high-end routers, with strength in our Cisco CRS-1 Carrier Routing System, Cisco 7600 Series, and Cisco 12000 Series products. Sales of our high-end routers, which represent a larger proportion of our total router sales compared with midrange and low-end routers, increased by approximately \$855 million in fiscal 2007 compared with fiscal 2006. Our high-end router sales are primarily to service providers, which tend to make larger and more uneven purchases. We believe that the increase in high-end router sales is attributable to service providers continuing to scale network capacity to accommodate actual and projected increases in data, voice and video traffic. During fiscal 2007, our sales of our integrated services routers (ISRs), which are included in the midrange and low-end routers, also increased and contributed to growth in sales of our advanced technologies products, such as security, unified communications, and wireless.

Switches The increase in net product sales related to switches in fiscal 2007 was primarily due to higher sales of local-area network (LAN) fixed-configuration switches, which increased during fiscal 2007 by approximately \$1.1 billion compared with fiscal 2006. Sales of LAN modular switches also increased during fiscal 2007 compared with fiscal 2006. The increase in sales of LAN switches was a result of the continued adoption by our customers of new technologies, including Gigabit Ethernet, 10 Gigabit Ethernet, and Power over Ethernet. This has resulted in higher sales of fixed-configuration switches, including the Cisco Catalyst 3750 Series, the Cisco Catalyst 2960 Series, the Cisco Catalyst 3560 Series, and our high-end modular switches, the Cisco Catalyst 6500 Series, as new technologies are deployed throughout our customers' networks from the data center to the wiring closet. Additionally, growth in advanced technologies such as unified communications and wireless LANs creates demand for LAN fixed-configuration and modular switching infrastructure as additional endpoints are added to the network.

Advanced Technologies The increase in net product sales related to advanced technologies in fiscal 2007 compared with fiscal 2006 was primarily due to the following:

- Video systems, which include solutions and systems designed to enable video-specific delivery systems for service providers, increased by approximately \$1.2 billion during fiscal 2007. The increases were attributable to several factors, including Scientific-Atlanta product sales being included in fiscal 2006 only subsequent to its acquisition in February 2006 compared with a full year in fiscal 2007; an increase in the demand for high-definition (HD) set-top boxes; network upgrades; international expansion; and the new Federal Communications Commission (FCC) requirements effective July 1, 2007, which required separable security for set-top boxes sold in the United States. We believe that the new FCC requirements had a positive impact on our sales of video systems in fiscal 2007 which will not recur in fiscal 2008; however, we are not able to quantify the effect of the new requirements on the increase in sales compared with fiscal 2006.
- Unified communications sales increased by approximately \$390 million during fiscal 2007, primarily due to sales of IP phones and associated software as our customers continued to transition from an analog-based to an IP-based infrastructure, and also the addition of sales from the acquisition of WebEx Communications, Inc. ("WebEx").
- Home networking product sales increased by approximately \$240 million during fiscal 2007. Scientific-Atlanta products composed the majority of the increase in home networking product sales during fiscal 2007.
- Sales of security products increased by approximately \$240 million during fiscal 2007, primarily due to module and line card sales related to our routers and LAN modular switches as customers continued to emphasize network security, and also due to sales of our next-generation adaptive security appliance product, which integrates multiple technologies including virtual private network (VPN), firewall, and intrusion prevention services on one platform.
- Sales of wireless LAN products increased by approximately \$190 million during fiscal 2007 primarily due to new customers, continued deployments with existing customers, and their adoption of our unified architecture platform.
- Other sales of advanced technologies relating to sales of storage area networking products increased by approximately \$110 million during fiscal 2007 and application networking services increased by approximately \$85 million during fiscal 2007.

Other Product Revenue The increase in other product revenue during fiscal 2007 compared with fiscal 2006 was primarily due to an increase in sales of optical networking products, sales of IP-based communications solutions to service providers and the additional contribution from Scientific-Atlanta. Our sales of optical networking products were previously included in our advanced technologies product category and prior year amounts have been reclassified to conform to the current year's presentation. Other product revenue also includes sales of emerging technology products.

# **EXHIBIT E**

Exhibit E

Civ. No. 04-876-GMS



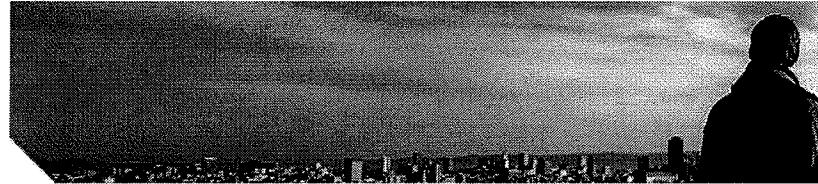
## **Cisco Product Quick Reference Guide**

Summer/Fall 2007

### **Corporate Headquarters**

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## Introduction

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### Cisco Systems, Inc. Overview

Cisco Systems, Inc. is the worldwide leader in networking for the Internet. Today, networks are an essential part of business, education, government and home communications, and Cisco Internet Protocol-based (IP) networking solutions are the foundation of these networks. Cisco hardware, software, and service offerings are used to create Internet solutions that allow individuals, companies, and countries to increase productivity, improve customer satisfaction and strengthen competitive advantage. The Cisco name has become synonymous with the Internet, as well as with the productivity improvements that Internet business solutions provide. At Cisco, our vision is to change the way people work, live, play and learn.

Cisco was founded in 1984 by a small group of computer scientists from Stanford University. Since the company's inception, Cisco engineers have been leaders in the development of Internet Protocol (IP)-based networking technologies. This tradition of IP innovation continues with industry-leading products in the core areas of routing and switching, as well as advanced technologies in areas such as: Home Networking, Optical, Storage Networking, IP Telephony, Network Security, and Wireless LAN. Today, with more than 34,000 employees worldwide, Cisco remains committed to creating networks that are smarter, thanks to built-in intelligent network services; faster, in their ability to perform at ever-increasing speeds; and more durable, with a generational approach to an evolutionary infrastructure.

### Cisco Product Quick Reference Guide (QRG) Background

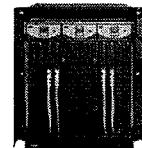
The Cisco Product Quick Reference Guide (QRG) is a handy, compact reference tool that includes brief product overviews, key features, sample part numbers, and abbreviated technical specifications for most of Cisco's products sold through our Channel partners. The Cisco Product QRG is primarily published to support Cisco partners, resellers, sales account teams, and even end-user customers who need a broad, high-level overview of Cisco products, but at that moment do not have access to Cisco's web site, Cisco.com at <http://www.cisco.com>.

### For More Information

For questions, comments, and to register a copy of the Cisco Product QRG, visit <http://www.cisco.com/go/guide>

**Chapter 8****Cisco ONS 15600 Multiservice Provisioning Platform**

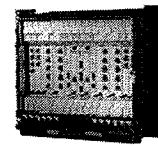
The Cisco ONS 15600 provides unparalleled flexibility in designing next generation metro networks. Fully engineered and optimized for metro applications, the Cisco ONS 15600 MSPP simplifies and revolutionizes bandwidth management in the metro core by allowing service providers to seamlessly integrate their metro core and metro edge networks, while dramatically reducing initial turn up costs. The Any Service Any Port (ASAP) interface cards of the Cisco ONS 15600 provide 1 to 16 ports of capacity to aggregate and transport mission-critical regional/metropolitan-area (metro) traffic using a modular, flexible and scalable design that allows single- and multiple-rate optics from OC-3 to OC-48, including Gigabit Ethernet SFP optics. Delivering scalability to 960 Gbps of traffic in a single rack, it complements the market-leading Cisco ONS 15454 MSPP by leveraging its proven architecture and operating software. This allows service providers to dramatically simplify their metro networks and realize immediate cost, space and operational benefits. The Cisco ONS 15600 MSPP provides complete integration of metro core and edge networks for service provisioning and network management.

**For More Information**

See the ONS 15600 Series Web site: <http://www.cisco.com/go/ons15600>

**Cisco ONS 15454 Multiservice Transport Platform**

The Cisco ONS 15454 Multiservice Transport Platform (MSTP) sets the industry benchmark for metropolitan and regional dense wavelength-division multiplexing solutions by using proven Cisco MSPP networking technologies to deliver simple, fast, and intelligent DWDM capabilities and lower capital and operating expenditures. A metropolitan network, being close to or on a customer's premises-unlike its long-haul counterpart-requires support for a great diversity of service interfaces. The service interfaces allow network providers to offer new tariffs and enable enterprise customers to natively transport a wide variety of services over a common transport network without unnecessary conversion stages and equipment. Additionally, a wide service mix simplifies the planning for services. The Cisco ONS 15454 MSTP, with its MSPP capabilities, supports a broad range of standards-based services in a single platform.



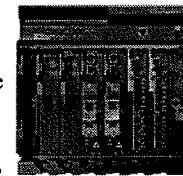
Critical to offering a wide service mix is a DWDM system's ability to offer the level of transparency required by the service. The ultimate in network management flexibility is achieved through an industry leading, fully reconfigurable optical add/drop multiplexer (ROADM) that allows zero to 32 channels of pass through or add/drop, A-Z wavelength provisioning, and full realtime power monitoring of each individual wavelength. The Cisco ONS 15454 MSTP solution offers the choice of multiservice aggregation, wavelength aggregation, and wavelength transport, combined with integrated, intelligent DWDM transmission, in a single platform to optimize network costs for any mix of service types. Using digital-wrapper technology (defined in ITU-T G.709) enables transparency while still allowing enhanced wavelength management and providing extended optical reach with integrated Forward Error Correction (FEC).

**For More Information**

See the ONS 15454 MSTP Web site:  
<http://www.cisco.com/en/US/products/hw/optical/ps2006/ps5320/index.html>

**Chapter 8****Cisco ONS 15310-MA SONET Multiservice Provisioning Platform**

The Cisco ONS 15310-MA is a compact but high density SONET device capable of multiservice TDM and Data aggregation and transport. The ONS 15310-MA offers tremendous service flexibility, supporting DS1, DS3/EC1, L1 and L2/3 Ethernet, and SFP enabled optics for OC3, OC12, OC48. The ONS 15310-MA is a hardened design, and supports up to 99.999 percent reliability for both access and edge networks. The Cisco ONS15310-MA is a carrier-class MSPP that efficiently switches Ethernet and TDM traffic for use in metropolitan and regional optical networks. The ONS 15310-MA can be managed using the Cisco Transport Controller (CTC) element management system and Cisco Transport Manager (CTM) for network management.

**For More Information**

See the ONS 15300 Web site: <http://www.cisco.com/go/ons15300>

**Cisco ONS 15310-CL SONET Multiservice Provisioning Platform**

By extending the metropolitan (metro) edge to customer premises and providing direct high-speed LAN connectivity, the Cisco ONS 15310-CL allows service providers to cost-effectively offer scalable, high-speed data services over their transport networks. For the enterprise, the Cisco ONS 15310-CL offers the efficiency, scalability, and high availability to meet the bandwidth demands of the mission-critical e-business infrastructure. These features are available without implementing new technology or upgrading the existing transport network infrastructure.

Optimized for the customer location, this evolutionary platform is based on the same technology as the industry leading Cisco ONS 15454 and the ONS 15327, supporting high optical bandwidth and can support DS1, DS3 and layer 1/2 10/100 Ethernet. The Cisco ONS 15310-CL also provides comprehensive STS- and VT-level bandwidth management and integrated data switching.

The integrated multiservice optical networking functions of the Cisco ONS 15310-CL dramatically reduce service-delivery costs. Packaged in a 1RU, industrially temperature-hardened Network Equipment Building Standards (NEBS) 3-compliant assembly, the Cisco ONS 15310-CL delivers fast provisioning and low initial cost, while maintaining a small footprint and low operational cost throughout the life of the product and can be managed using the CTC element management system and CTM for network management.

**For More Information**

See the ONS 15300 Web site: <http://www.cisco.com/go/ons15300>

# **EXHIBIT F**

**REDACTED**